



New England Water Treatment Technology Assistance Center

University of New Hampshire • Durham, New Hampshire

PROJECT SUMMARY REPORT

Regulatory and Consulting Engineer Training Program - I

Project Objectives

The principal objective of this project was to develop training materials for engineers in the form of a CD-ROM covering three water treatment technologies that are important for small water systems: slow sand filtration, iron and manganese control and arsenic removal. The CD was designed to educate state and federal regulators and practicing engineers about these newer treatment technologies and provide a template for the design process. The development of this water treatment technology CD has been a collaboration between the University of New Hampshire and the University of Tennessee, Knoxville.

Methodology

A common organization of subjects for each treatment technology module was chosen and includes:

- Typical process description and flow diagrams including any chemical additions
- Treatment theory at a level appropriate to the audience
- Design features, design criteria, and example calculations
- Operational considerations
- Field studies and typical treatment technology performance
- Necessary operator skill levels
- Potential for automation
- Advantages, limitations, and concerns
- Piloting requirements
- Estimated costs
- Number and location of full-scale facilities

Multimedia, graphic, and design elements were an important feature of the CD and include:

- Photos and videos of treatment plants showing the types of equipment, instrumentation, and laboratory facilities
- Typical plans and specifications from engineering firms and process equipment manufacturers
- Easy navigational structure allowing the user to access any topic quickly
- Typical process diagrams that allow the user to click on aspects of the process to see text, photos, and video about that aspect

- A search capability allowing the user to go directly to any page containing a key search word
- An on-line glossary of terms

Major tasks in the development of the CD-ROM included:

- Reviewing literature of the water treatment technology and writing the text for each technology module
- Working with the University of Tennessee's legal counsel to address copyright, permission-to-use, and end user license issues
- Identifying operating plants and making field visits to take photos and video
- Obtaining sample plans and specifications for the treatment technology
- Developing the educational modules using an icon-based authoring program incorporating text, graphics, photos, video, and other multimedia
- Obtaining external peer reviews by two experts in each technology and addressing their comments

Developing the CD-ROM itself included:

- Digitizing and formatting the approximately 250 photos and 50 video clips
- Adding explanations to photos and videos and drawing additional graphics
- Creating a storyboard consisting of sample screen designs and overall layout of the CD-ROM so that the software is intuitive and fluid but yet allows the user to access any topic randomly
- Incorporating the text, photos, graphics, and video clips into an authoring program
- Debugging and editing the final program
- Writing the run-time version of the software to a CD-ROM such that no installation or extra software is required by the user.

Findings

The CDs have been well received where presented to date. The final CD-ROM has been distributed at no charge to state agencies through the Association of State Drinking Water Administrators, USEPA headquarters and USEPA regional offices, and selected water industry associated and practicing engineers.

There has been strong feedback for providing similar information on a web-site as the internet may be more comprehensibly available to small system professionals. Copyright releases and approvals are problematic to information distribution. Hopefully, further distribution of the CD-ROMs can be facilitated by an established distribution agency such as the National Drinking Water Clearinghouse.

Conclusions and Recommendations

The positive feedback received on the distributed CD-ROMs and conference attendees support the development of future technology guides on current treatability issues.

Future technology guides should be developed for the internet so that availability of the material can be easily accessed by small system professionals. Copyright issues and distribution arrangements should be worked out prior to additional technology guide development.



Publication

This project was presented by Dr. R. Bruce Robinson at the 2002 New England Water Works Association (NEWWA) annual conference in Hyannis, Massachusetts, September of 2002. A paper describing the CD has been published and is referenced below.

“Small Public Water Systems Technology Guide,” by R. B. Robinson, M. R. Collins, and G. Harrison. Journal of New England Water Works Association, Vol. 117, No. 3. Sept. 2003.

Disclaimer

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